

Internet of Things at Bohunt School (Wokingham)

Resource Sheet - Introduction to AllCode- Buggy

RS-13

This practical session introduces the AllCode Buggy from Matrix Multimedia.

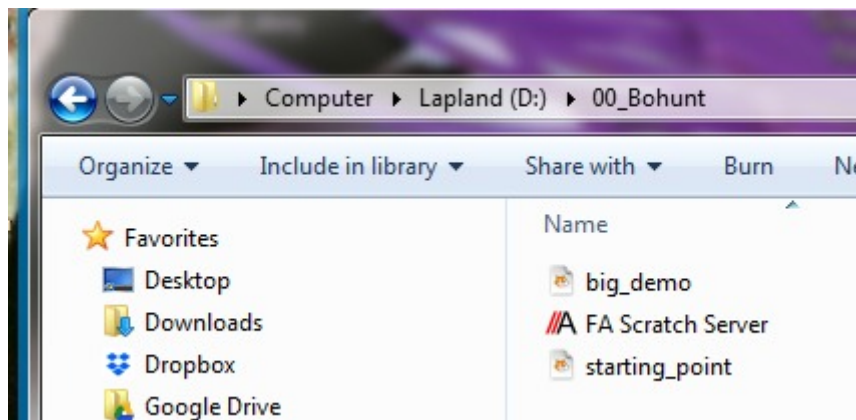
Although the Buggy can perform a number of functions, this resource sheet just covers how to connect to the Buggy via Bluetooth, how to make the Buggy move, how to display a message on the LCD and how to play a musical sound.

Connecting to the Buggy

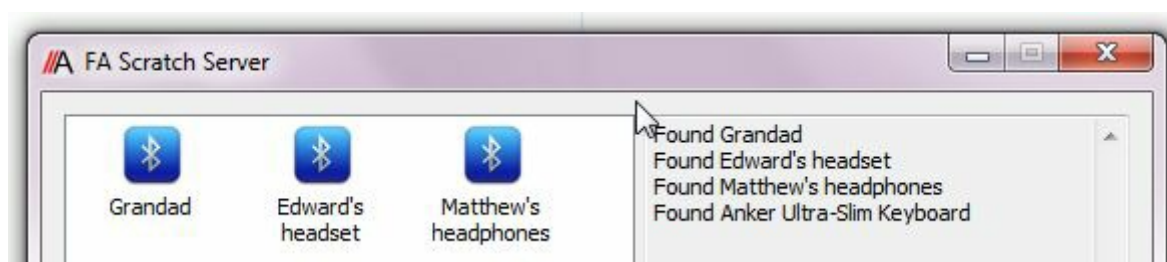
Step 1 Switch on Bluetooth communication

See Mr D about how to do this on your PC/Laptop

Step 2 Run the FA Scratch Server (on the D drive in the 00_Bohunt folder)

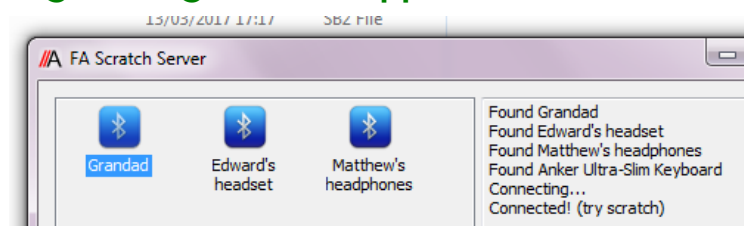


Step 3 Click the name of the Buggy you have been given (e.g. Grandad)



Step 4 Click the Connect button at the bottom of the FA Server window

Step 5 The following message should appear

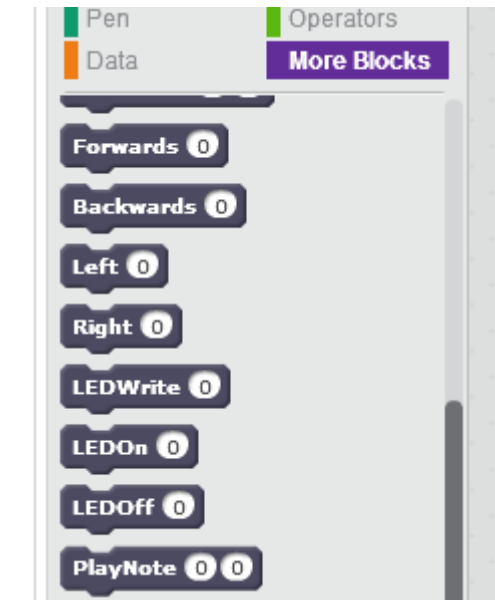


Step 6 Double-click the Scratch program called 'starting_point'

Step 7 Congratulations you have connected to your AllCode Buggy

Getting the Buggy to move

Step 1 Click the 'More Blocks' option located in the central part of Scratch
This should reveal the following blocks to interact with the Buggy



Most of the blocks have names that are obvious

Forwards - moves the Buggy forward

Backwards - moves the Buggy backwards

The number defines the number of millimetres
the Buggy will travel

Left and Right will cause the Buggy to turn

The number defines the number of degrees

Step 2 Try writing this Scratch program to move the Buggy around



Can you work out the shape the Buggy will transcribe
when the 'a' key is pressed ?

The flow, shown at the bottom of this page, makes use
of a 'repeat loop' to achieve the same movement

Getting the Buggy to display a message

The flow on the right also
introduces some commands
to control the LCD panel

See if you can alter the message

The first number defines the pixel-column

The second number defines the pixel-row

Each character sits on a 5 by 7 pixel matrix
with a single pixel gap to the right and below each character (i.e. 6 * 8 pixels)



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Getting the Buggy to play a sound

Step 1 Here's an example to play middle-C (i.e. 262Hz) for 1 second



The first number defines the frequency in Hertz (Hz)

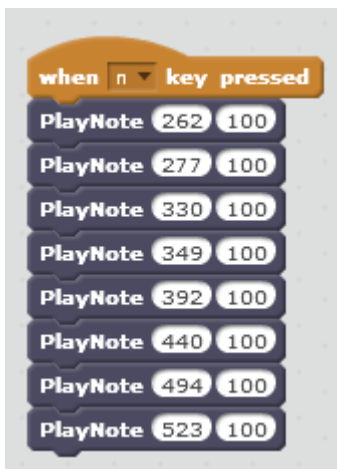
The second number is the duration (in milliseconds) the note will be played

1000 ms = one second

500 ms = half a second

100 ms = one tenth of a second

Step 2 Playing a musical scale (from middle-C)



Here's an example program to play a musical scale

Ask Mr D for a musical reference chart

Step 3 Find a piece of music (preferably without any sharps and/or flats)

Ask Mr D if you have trouble finding a musical score

Over to you

1. Make up a simple tune.
2. Workout the notes. (C, D, E etc...)
3. Look up the frequencies on the reference chart.
4. Insert the frequency values into your Scratch program.
5. Sit back with your friends and listen to your masterpiece.